

PATENT SPECIFICATION

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(54) WATCH CASE FOR A BATTERY OPERATED WATCH

(71) We, KABUSHIKI KAISHA SUWA SEIKOSHA, a Japanese Company of 3-4, 4-chome, Ginza, Chuo-ku, Tokyo, Japan, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns a watch case for a battery operated watch.

A watch case for a battery operated watch is conventionally provided with a battery cover which is removed whenever it is necessary to replace the battery. However it has not been easy to remove the battery cover, in view of the need to seal the battery cover to the case back of the watch, so as to prevent dust and other material from entering the watch case. Moreover, the battery cover has usually been thick and has projected from the rear surface of the case back, while the use of a battery cover has increased the overall thickness of the watch case.

According to the present invention, there is provided a watch case for a battery operated watch, the watch case comprising a case body member having a space within which a battery may be mounted, a case back which is secured to or integral with the case body member and which is provided with an aperture through which the battery may be introduced into and removed from said space, a battery cover which is mounted in said aperture with a bayonet fastening and which closes the latter, the battery cover or means secured thereto having an engagement portion which directly engages the case back, and a gasket which is interposed between parts of the case back and battery cover to effect sealing therebetween, the whole of the gasket being disposed radially outwardly of the said engagement portion so that there is no overlap therebetween.

The gasket is preferably carried by the case back, the battery cover being movable into and out of engagement with the gasket. Thus the gasket may be mounted within a groove in the case back, both the case back and the battery cover having flanges which engage the gasket.

The said means secured to the battery cover may comprise a bayonet plate.

The case back may, if desired, be a snap fit on the case body member or may be screwed into the latter. Alternatively it may be integral with the case body member.

The battery cover and the case back preferably have external surfaces which lie substantially in a common plane.

The invention also comprises a battery operated watch provided with a watch case as set forth above.

The invention is illustrated, merely by way of example, in the accompanying drawings, in which:—

Figure 1 is a broken-away cross-sectional view of a known watch case, and

Figure 2 is a broken-away cross-sectional view of a watch case according to the present invention.

Terms such as "upper", and "lower", as used in the description below, are to be understood to refer to directions as seen in the accompanying drawings.

In Figure 1 there is shown a known battery operated watch having a movement or circuit block 1 which is powered by a battery 2, the battery 2 being mounted in a concave portion of the movement or circuit block 1.

The movement or circuit block 1 is disposed within a space 7a which is provided within a case body member 7 of the watch. Secured by a snap fit to the back or lower surface of the case body member 7 is a case back 4 which is provided with an aperture 4e through which the battery 2 may be introduced into and may be removed from the space 7a.

A battery cover 3 is mounted in the aperture 4e and closes the latter. Secured to the battery cover 3 is a bayonet plate 5 (or if desired a plurality of such plates) having an engagement portion 5a which directly engages the upper surface of a flange part 4a of the case back 4. The battery cover 3 carries a gasket 6 which is disposed in a recess in the battery cover 3, the battery cover 3 having a flange part 3a which overlies the gasket 6 and a flange part 3b which underlies the gasket 6.

When the parts are in the position shown in Figure 1, the gasket 6 engages the case back 4 and serves to seal the battery cover 3 and case back 4 to each other.

- 5 In the construction shown in Figure 1 a bayonet plate 5 is used, although it is also known to connect the battery cover 3 to the case back 4 by a screw fastening.

- 10 As will be seen from Figure 1, the distance between the lower surface 2a of the battery 2 and the lower surface 3c of the battery cover 3 is somewhat greater than the total thickness of the engagement portion 5a, the flange part 4a, and the flange parts 3a, 3b with the gasket 6 therebetween. Moreover, in order to provide the required structural strength and to take account of curvature and other imperfections which can occur during manufacture, it is not possible to make the various flange parts 4a, 3a, 3b especially thin. Thus for example it is necessary to make the flange part 3a relatively thick to prevent the gasket 6 from falling out of the battery cover 3 and also to enable it to be assembled easily into the battery cover 3. Consequently the overall thickness of the battery cover 3 is considerable, and this in turn means that the overall thickness of the watch case is considerable.

- 30 In Figure 2 there is therefore shown a battery operated watch provided with a watch case according to the present invention. The watch case of Figure 2 is generally similar to that of Figure 1, and will not therefore be described in detail, like reference numerals indicating like parts.

- 35 In the structure shown in Figure 2, however, a gasket 6a is employed which, instead of being carried by the battery cover 3, is carried by the case back 4, the battery cover 3 being movable into and out of engagement with the gasket 6a. For this purpose, the gasket 6a, is mounted within a groove 4c in the case back 4, the case back 4 having a flange part 4b which underlies the gasket 6a and a flange part 4d which overlies the gasket 6a. When, moreover, the parts are assembled as shown in Figure 2, both the flange part 4b of the case back 4 and the flange part 3b of the battery cover 3 engage the gasket 6a.

- 50 Such a structure is substantially thinner than that shown in Figure 1, since the battery cover 3 of Figure 2 merely needs to be provided with the flange part 3b and does not need to be provided with the flange part 3a. This arises because of the fact that the whole of the gasket 6a is disposed radially outwardly of the engagement portion 5a so that there is no overlap therebetween. Consequently, as will be readily seen from Figure 2, the distance between the lower surface 2a of the battery 2 and the lower surface 3c of the battery cover 3 is substantially the same as the total thickness of the engagement portion 5a of the bayonet plate 5, the flange part 4d, the gasket 6a, and the flange part 3b of the battery cover

3. It will therefore easily be seen that the battery cover 3 of Figure 2 is substantially thinner than that of Figure 1, and consequently the watch case as a whole will also be thinner. Moreover, since the gasket 6a is carried by the case back 4 it is less likely to be lost, and consequently assembly of the battery cover and case back 4 is simpler.

As indicated above, the thickness of the battery cover 3 can be reduced by an amount equal to the thickness of the flange part 3a of the Figure 1 construction. Moreover, as can also be seen from Figure 1, it is necessary in practice to provide some space between the flange parts 3a, 4a of the Figure 1 construction so as to allow for manufacturing variation. No such space, however, needs to be provided in the Figure 2 construction, which is thinner in consequence.

The external surface 3c of the battery cover 3 lies substantially in the same plane as the external surface 4f of the case back 4. Consequently, the battery cover 3, in the case of the Figure 2 construction, does not project outwardly of the case back 4 to any extent, whereas in the Figure 1 construction, the battery cover 3 projects outwardly of the case back 4 to a considerable extent. The construction shown in Figure 2 thereof enables the back of the watch to fit right against the wrist of the user and therefore makes for a more elegant looking watch.

In the construction shown in Figure 2, the case back 4 is a snap fit on the case body member 7. Alternatively, however, the case back 4 may if desired either be integral with the case body member 7 or may be screwed into the latter.

The reduction in the thickness of the battery cover 3 reduces material costs and enables a thinner watch to be produced without involving additional parts or more difficult assembly.

WHAT WE CLAIM IS:—

1. A watch case for a battery operated watch, the watch case comprising a case body member having a space within which a battery may be mounted, a case back which is secured to or integral with the case body member and which is provided with an aperture through which the battery may be introduced into and removed from said space, a battery cover which is mounted in said aperture with a bayonet fastening and which closes the latter, the battery cover or means secured thereto having an engagement portion which directly engages the case back, and a gasket which is interposed between parts of the case back and battery cover to effect sealing therebetween, the whole of the gasket being disposed radially outwardly of the said engagement portion so that there is no overlap therebetween.

2. A watch case as claimed in claim 1 in which the gasket is carried by the case back,

the battery cover being movable into and out of engagement with the gasket.

- 5 3. A watch case as claimed in claim 2 in which the gasket is mounted within a groove in the case back, both the case back and the battery cover having flanges which engage the gasket.

- 10 4. A watch case as claimed in any preceding claim in which the said means secured to the battery cover comprises a bayonet plate.

5. A watch case as claimed in any preceding claim in which the case back is a snap fit on the case body member.

- 15 6. A watch case as claimed in any of claims 1 to 4 in which the case back is screwed into the case body member.

7. A watch case as claimed in any preceding

claim in which the battery cover and the case back have external surfaces which lie substantially in a common plane.

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8. A watch case substantially as hereinbefore described with reference to and as shown in Figure 2 of the accompanying drawings.

- 25 9. A battery operated watch provided with a watch case as claimed in any preceding claim.

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